

IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor(s) Gregg S. Goyins et al.

Confirmation No.: 6980

Application No.: 09/497,021

Examiner: K. M. Nguyen

Filing Date: 02-01-2000

Group Art Unit: 2674

Title: HIGH PERFORMANCE SWITCHABLE POLARIZERS FOR OPTICAL PROJECTION
DISPLAYS AND CIRCUITS FOR DRIVING THE POLARIZERS

Mail Stop Appeal Brief-Patents
Commissioner For Patents
PO Box 1450
Alexandria, VA 22313-1450

TRANSMITTAL OF APPEAL BRIEF

Sir:

Transmitted herewith is the Appeal Brief in this application with respect to the Notice of Appeal filed on 09-14-2005.

The fee for filing this Appeal Brief is (37 CFR 1.17(c)) \$500.00.

(complete (a) or (b) as applicable)

The proceedings herein are for a patent application and the provisions of 37 CFR 1.136(a) apply.

() (a) Applicant petitions for an extension of time under 37 CFR 1.136 (fees: 37 CFR 1.17(a)-(d)) for the total number of months checked below:

() one month	\$120.00
() two months	\$450.00
() three months	\$1020.00
() four months	\$1590.00

() The extension fee has already been filled in this application.

(X) (b) Applicant believes that no extension of time is required. However, this conditional petition is being made to provide for the possibility that applicant has inadvertently overlooked the need for a petition and fee for extension of time.

Please charge to Deposit Account **08-2025** the sum of \$500.00. At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account 08-2025 pursuant to 37 CFR 1.25. Additionally please charge any fees to Deposit Account 08-2025 under 37 CFR 1.16 through 1.21 inclusive, and any other sections in Title 37 of the Code of Federal Regulations that may regulate fees. A duplicate copy of this sheet is enclosed.

(X) I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EV482724432US, in an envelope addressed to: MS Appeal Brief - Patents, Commissioner for Patents, PO Box 1450, Alexandria, VA 22313-1450
Date of Deposit: November 11, 2005

Respectfully submitted,

Gregg S. Goyins et al.

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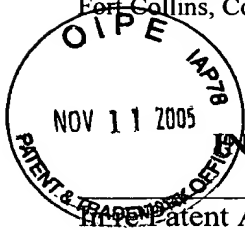
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11-14-05

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Docket No.: 10992292-1
(PATENT)



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re: Patent Application of:
Gregg S. Goyins et al.

Application No.: 09/497,021

Confirmation No.: 6980

Filed: February 1, 2000

Art Unit: 2674

For: HIGH PERFORMANCE SWITCHABLE
POLARIZERS FOR OPTICAL PROJECTION
DISPLAYS AND CIRCUITS FOR DRIVING
THE POLARIZERS

Examiner: K. M. Nguyen

APPEAL BRIEF

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

As required under § 41.37(a), this brief is filed within two months of the Notice of Appeal filed in this case on September 14, 2005, and is in furtherance of said Notice of Appeal.

The fees required under § 41.20(b)(2) are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief contains items under the following headings as required by 37 C.F.R. § 41.37 and M.P.E.P. § 1206:

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|------|-----------------------------------|
| I. | Real Party In Interest |
| II | Related Appeals and Interferences |
| III. | Status of Claims |
| IV. | Status of Amendments |

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V.	Summary of Claimed Subject Matter
VI.	Grounds of Rejection to be Reviewed on Appeal
VII.	Argument
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X.	Related Proceedings
Appendix A	Claims
Appendix B	Related Appeals and Interferences
Appendix C	Evidence

I. REAL PARTY IN INTEREST

The real party in interest for this appeal is:

Hewlett-Packard Development Company, L.P., a Texas Limited Partnership having its principal place of business in Houston, Texas.

II. RELATED APPEALS, INTERFERENCES, AND JUDICIAL PROCEEDINGS

There are no other appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in this appeal.

III. STATUS OF CLAIMS

A. Total Number of Claims in Application

There are 28 claims pending in the application.

B. Current Status of Claims

1. Claims canceled: 0
2. Claims withdrawn from consideration but not canceled: 0
3. Claims pending: 1-28
4. Claims allowed: 0
5. Claims rejected: 1-28

C. Claims On Appeal

The claims on appeal are claims 1-28

IV. STATUS OF AMENDMENTS

Appellant did not file an Amendment After Final Rejection.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Embodiments of the invention, such as set forth in claim 1, comprise a switchable polarizer (item 300, FIGURE 3) for optical projection displays including a first electrode (item 315, FIGURE 3); a second electrode (item 320, FIGURE 3); and a layer of liquid crystal material (item 325, FIGURE 3) positioned between the first and second electrodes; wherein the first and second electrodes conduct current to heat the polarizer (page 8, lines 1-7).

Embodiments of the invention, such as set forth in claim 13, comprise a method of driving a switchable polarizer (item 300, FIGURE 3) in one of two modes, the switchable polarizer having first and second electrodes (items 315 and 320, FIGURE 3) and a liquid crystal material (item 325, FIGURE 3) between the electrodes, wherein during a first driving mode, the electrodes heat the liquid crystal material (page 9, lines 14-19), while during the second driving mode, the electrodes do not heat the liquid crystal material (page 9, lines 14-19), the method comprising: drawing equal currents through the first and second electrodes during the first driving mode (page 8, lines 1-7); and applying a first voltage signal to the first electrode and a second voltage signal to the second electrode during both the first and second driving modes, the first and second voltage signals sustaining the currents drawn through the first and second electrodes during the first driving mode (page 9, lines 1-9).

Embodiments of the invention, such as set forth in claim 17, comprise a switchable polarizing apparatus (item 300, FIGURE 3) for optical projection displays comprising: a first electrode (item 315, FIGURE 3) for receiving a first driving signal, and a second electrode (item 320, FIGURE 3) for receiving a second driving signal, wherein the first and second driving signals are different (page 9, lines 20-23); a layer of liquid crystal material (item 325, FIGURE 3) positioned between the first and second electrodes; a first current source (item

405, FIGURE 4) switchably coupled to the first electrode, said first current source for drawing a first current through the first electrode (page 8, lines 1-7); a second current source (item 410, FIGURE 4) switchably coupled to the second electrode, said second current source for drawing a second current through the second electrode, said second current being equal in magnitude to the first current (page 8, lines 2-3); and a buffer circuit (items 425 and 430, FIGURE 4) coupled to the first and second electrodes, said buffer circuit applying the driving voltage signals to the first and second electrodes, said driving signals sustaining the first and second currents through the electrodes (page 8, line 20 through page 9, line 13).

Embodiments of the invention, such as set forth in claim 20, comprise a switchable polarizer (item 300, FIGURE 3) for optical projection displays comprising: a set of electrodes (items 315 and 320, FIGURE 3) arranged in two layers; and a layer of liquid crystal material (item 325, FIGURE 3) positioned between the two layers of the set of electrodes; wherein said set of electrodes are operable to control polarization states of said layer of liquid crystal and are operable to conduct sufficient current to control a temperature of said layer of liquid crystal (page 7, line 17 through page 8, line 7).

Embodiments of the invention, such as set forth in claim 24, comprise a method of operating a liquid crystal polarizer (item 300, FIGURE 3) comprising: driving a set of electrodes (items 315 and 320, FIGURE 3) to cause current to flow through said set of electrodes to sufficiently heat a liquid crystal layer (item 325, FIGURE 3) of said liquid crystal polarizer to control a temperature of said liquid crystal layer (page 8, lines 1-7), wherein said set of electrodes is arranged in two layers surrounding said liquid crystal layer (See FIGURE 3); and driving said set of electrodes to establish an electric field across said layer of liquid crystal to control polarization states of said liquid crystal (page 7, lines 17-22).

Embodiments of the invention, such as set forth in claim 2, comprise the current passing through the first electrode is equal in magnitude to the current passing through the second electrode (page 8, lines 2-3). Embodiments of the invention, such as set forth in claim 3, comprise the currents passing through the first and second electrodes are constant (page 8, lines 17-19). Embodiments of the invention, such as set forth in claim 4, comprise during a heating operation, the first and second electrodes apply a uniform electric field across the liquid crystal material (page 10, lines 4-10). Embodiments of the invention, such as set forth

in claim 14, comprise the drawing of currents through the electrodes includes coupling the electrodes to two current sources (*See* FIGURE 4). Embodiments of the invention, such as set forth in claim 15, comprise the applying of the voltage signals to the electrodes includes coupling each electrode to an output of an amplifier (*See* FIGURE 4). Embodiments of the invention, such as set forth in claim 18, comprise a buffer circuit includes a programmable gain amplifier (items 425, 430, FIGURE 4) for each electrode, each amplifier applying the driving voltage signal to its corresponding electrode (page 8, line 20). Embodiments of the invention, such as set forth in claim 25, comprise driving said set of electrodes to cause current to flow and said driving said set of electrodes to establish an electric field occur simultaneously (page 8, lines 1-7).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

First, claims 1, 2, 4, 6-11, 20, 24-26, and 28 are rejected under 35 U.S.C. §102(b) over U.S. Patent No. 5,080,467 (hereinafter, "*Kahn*").

Second, claims 17-19 are rejected under 35 U.S.C. §102(b) over U.S. Patent No. 5,754,155 (hereinafter, "*Kubota*").

Third, claims 3, 5, 21, 22, and 27 are rejected under 35 U.S.C. §103(a) over *Kahn* in view of U.S. Patent No. 3,410,999 (hereinafter, "*Ferguson*").

Fourth, claim 23 is rejected under 35 U.S.C. §103(a) over *Ferguson* in view of *Kahn* in further view of *Kubota*.

Fifth, claims 13, 14, and 16 are rejected under 35 U.S.C. §103(a) over *Ferguson* in view of *Kahn*.

Sixth, claim 15 is rejected under 35 U.S.C. §103(a) over *Ferguson* in view of *Kahn* in further view of U.S. Patent No. 4,820,933 (hereinafter, "*Hong*").

VII. ARGUMENT

A. Note Regarding Claim 12

Page 1 of the Final Office Action indicates that all of claims 1-28 are rejected. However, the Examiner does not address claim 12 in any of the six grounds of rejection above. Appellant believes that claim 12 is patentable over the art of record, as no cited art teaches or suggests the claimed features. Appellant respectfully requests a chance to refute any rejection of claim 12 that may be presented in the future.

B. First Ground of Rejection

Claims 1, 2, 4, 6-11, 20, 24-26, and 28 are rejected under 35 U.S.C. §102(b) over *Kahn*. Appellant traverses the rejection.

1. Claims 1, 6-8, and 11

It is well settled that to anticipate a claim, the reference must teach every element of the claim, *See* M.P.E.P. §2131. Moreover, in order for a prior art reference to be anticipatory under 35 U.S.C. § 102 with respect to a claim, “[t]he elements must be arranged as required by the claim,” *See* M.P.E.P. § 2131, citing *In re Bond*, 15 U.S.P.Q.2d 1566 (Fed. Cir. 1990). Furthermore, in order for a prior art reference to be anticipatory under 35 U.S.C. § 102 with respect to a claim, “[t]he identical invention must be shown in as complete detail as is contained in the . . . claim,” *See* M.P.E.P. § 2131, citing *Richardson v. Suzuki Motor Co.*, 9 U.S.P.Q.2d 1913 (Fed. Cir. 1989). Appellant respectfully asserts that the rejection does not satisfy these requirements.

Claim 1 defines a switchable polarizer that has the first and second electrodes conducting current to heat the polarizer. *Kahn* does not disclose at least this limitation. As shown in Figure 1 of *Kahn* and discussed at column 2, line 63, only one electrode, namely electrode 18, is used to heat the liquid crystal material 20. Thus, *Kahn* does not teach all of the claimed limitations.

In Response to Arguments, the Examiner repeats the rejection and further alleges in rebuttal that *Kahn* teaches a switchable polarizer. Final Office Action at 9. Whether this is true or not is irrelevant, as such an allegation fails to address the fact that *Kahn* does not teach

the first and second electrodes conducting current to heat the polarizer, as claimed.

Therefore, Appellant respectfully asserts that for the above reasons claim 1 is patentable over the 35 U.S.C. § 102 rejection of record.

Dependent claims 6-8 and 11 each depend from independent claim 1 and, thus, inherit all of the limitations of independent claim 1. Accordingly, *Kahn* does not teach all claim limitations of claims 6-8 and 11. It is respectfully submitted that dependent claims 6-8 and 11 are allowable at least because of their dependence from claim 1 for the reasons discussed above. Accordingly, Appellant respectfully requests the withdrawal of the rejection of claims 1, 6-8, and 11.

2. Claim 2

In addition to being allowable because of its dependence from claim 1, claim 2 recites features that are allowable in their own right. Claim 2 recites, in part, “the current passing through the first electrode is equal in magnitude to the current passing through the second electrode.” *Kahn* does not teach this feature of claim 2. As explained above with regard to claim 1, only one electrode in *Kahn* (item 18, FIGURE 1) passes current. Thus, *Kahn* does not teach two currents equal in magnitude. Further, the Examiner states:

As to claim 2, *Kahn* et al reviews [sic] the electrical current pulse through the electrode is used to generate heat in the liquid crystal (*See* fig. 1, col. 2, lines 45-47). Thus, the difference of electrical potential between two points of a conductor carrying a constant current [sic].

Final Office Action at 2-3. Such statement is incorrect. In the first sentence of the quote above, the Examiner acknowledges that *Kahn* teaches current pulses, yet rests the reasoning of the rejection on a “constant current” in the second sentence. Not only is it technically incorrect to say that a pulsed current is a constant current, but it is unclear how such issue is germane to the above-recited feature of claim 2. Accordingly, *Kahn* does not teach this feature. Therefore, reversal of the §102 rejection of claim 2 is respectfully requested.

3. Claim 4

In addition to being allowable because of its dependence from claims 1 and 2, claim 4 recites features that are allowable in their own right. Claim 4 recites, in part, “during a

heating operation, the first and second electrodes apply a uniform electric field across the liquid crystal material.” This feature is not taught by *Kahn*. The Examiner alleges that the first and second electrodes apply a uniform electric field across the liquid crystal layer. Final Office Action at 3. The Examiner cites the passage at column 2, lines 3-4 of *Kahn* to support such assertion. *Id.* The cited passage merely teaches that the electrodes are parallel plates and does not mention the qualities of an electric field. See *Kahn* at Col. 2, lines 3-4. However, the passage at column 2, lines 53-60, teaches that current is applied through one electrode during operation. Accordingly, the resultant electric field varies as the potential along the current carrying electrode changes. Thus, the electric field in *Kahn* is not uniform. Therefore, *Kahn* does not teach the above-recited feature of claim 4, and reversal of the §102 rejection of claim 4 is respectfully requested.

4. Claims 9 and 10

In addition to being allowable because of its dependence from claim 1, claim 9 recites features that are allowable in their own right. Claim 9 recites, in part, “the first and second voltage signals are alternating signals.” *Kahn* does not teach this feature of claim 9. The Examiner points out that *Kahn* teaches the use of AC voltages and that AC voltages are alternating. Final Office Action at 3. However, *Kahn* teaches an alternating voltage source (item 22, FIGURE 1) only on one electrode (item 18, FIGURE 1). *Kahn* does not teach an alternating voltage signal on the other electrode, 16. Accordingly, *Kahn* does not teach the above-recited feature of claim 9. Therefore, reversal of the §102 rejection of claim 9 is respectfully requested.

Dependent claim 10 depends from independent claim 1 and dependent claim 9 and, thus, inherits all of the limitations of those claims. Thus, the *Kahn* does not teach all claim limitations of claim 10. It is respectfully submitted that dependent claim 10 is allowable at least because of its dependence from claims 1 and 9 for the reasons discussed above.

5. Claim 20

Claim 20 defines a switchable polarizer that has the set of electrodes be operable to conduct sufficient current to control a temperature of said layer of liquid crystal. *Kahn* does not disclose at least this limitation. As shown in Figure 1 of *Kahn* and discussed at column 2

line 63, only one electrode, namely electrode 18, is used to heat the liquid crystal material 20. Thus, *Kahn* does not teach all of the claimed limitations because it does not teach the claimed set of electrodes operable to conduct sufficient current to control a temperature of said layer of liquid crystal.

In Response to Arguments, the Examiner repeats the rejection and further alleges in rebuttal that *Kahn* teaches a switchable polarizer. Final Office Action at 9. Whether this is true or not is irrelevant, as such an allegation fails to address the fact that *Kahn* does not teach a set of electrodes operable to conduct sufficient current to control a temperature of said layer of liquid crystal, as claimed. Therefore, Appellant respectfully asserts that for the above reasons claim 20 is patentable over the § 102 rejection of record.

6. Claims 24, 26, and 28

Claim 24 defines a method that includes driving a set of electrodes to cause current to flow through said set of electrodes to sufficiently heat a liquid crystal layer of said liquid crystal polarizer to control a temperature of said liquid crystal layer. *Kahn* does not disclose at least this limitation because it does not teach the claimed driving a set of electrodes to cause current to flow. As shown in Figure 1 of *Kahn*, and discussed at column 2 line 63, only one electrode, namely electrode 18, is used to heat the liquid crystal material 20. Thus, *Kahn* does not teach all of the claimed limitations.

In Response to Arguments, the Examiner repeats the rejection and further alleges in rebuttal that *Kahn* teaches a switchable polarizer. Final Office Action at 9. Whether this is true or not is irrelevant, as such an allegation fails to address the fact that *Kahn* does not teach driving a set of electrodes to cause current to flow, as claimed. Therefore, Appellant respectfully asserts that for the above reasons claim 24 is patentable over the § 102 rejection of record.

Dependent claims 26 and 28 each depend from independent claim 24 and, thus, inherit all of the limitations of independent claim 24. Thus, *Kahn* does not teach all claim limitations of claims 26 and 28. It is respectfully submitted that dependent claims 26 and 28 are allowable at least because of their dependence from claim 24 for the reasons discussed

above. Accordingly, Appellant respectfully requests the withdrawal of the § 102 rejection of claims 24, 26, and 28.

7. Claim 25

In addition to being allowable because of its dependence from claim 24, claim 25 recites features that are allowable in their own right. Claim 25 recites, in part, “said driving said set of electrodes to cause current to flow and said driving said set of electrodes to establish an electric field occur simultaneously.” *Kahn* does not teach this feature. Rather, *Kahn* teaches two different modes—one for heating and one for applying an electric field. *Kahn* at Col. 2, lines 41-50 and Col. 3, lines 6-20. *Kahn* does not teach that these modes are simultaneous. Therefore, *Kahn* does not teach the above-recited feature. Accordingly, Appellant respectfully asserts that for the above reasons claim 24 is patentable over the § 102 rejection of record.

C. Second Ground of Rejection

Second, claims 17-19 are rejected under 35 U.S.C. §102(b) over *Kubota*. Appellant traverses the rejection.

1. Claims 17 and 19

Claim 17 defines a switchable polarizing apparatus having a layer of liquid crystal material positioned between the first and second electrodes. *Kubota* does not disclose at least this limitation. The Examiner identifies the + and – leads in Figure 4 of *Kubota* as corresponding to the claimed electrodes. Final Office Action at 8. However, the + and – leads of Figure 4 are connected to the Scan Signal Line Driving Circuit element (item 3, FIGURE 1), which is a control element, and thus would not have a layer of liquid crystal material positioned between the cited leads. See *Kubota* at Col. 8, lines 46-54. This is apparent when it is noted that FIGURE 4 shows the connection of the Scan Signal Line Driving Circuit element to the power supply element (item 11, FIGURE 1). *Kubota* does not teach that the connection of the Scan Signal Line Driving Circuit element to the power supply circuit includes the claimed layer of liquid crystal material. Thus, *Kubota* does not teach all of the claimed limitations.

In Response to Arguments, the Examiner refutes Appellant's traversal by alleging that element C_L of FIGURE 1 is a liquid crystal element positioned between first and second electrodes. Final Office Action at 10. This allegation is incorrect for at least two reasons. First, it appears that the Examiner equates two separate and altogether different circuits. Note that the circuitry connected to the C_L element (FIGURE 1) is different from the power supply circuitry (FIGURE 4) cited in the body of the rejection. Thus, it is believed that the allegations concerning the C_L circuitry do not cure the deficiency of the main rejection.

Second, if the Examiner changes the rejection to include the C_L element, then the rejection fails to show other elements. For instance, claim 17 also recites, in part, "a first electrode for receiving a first driving signal, and a second electrode for receiving a second driving signal, wherein the first and second driving signals are different," which is not shown by the C_L element of FIGURE 1. Note that the circuit that the Examiner cites between transistor TR_{PX} and ground, which includes element C_L in FIGURE 1, includes those three parts in series. The Examiner cites the connection of C_L to TR_{PX} as one electrode and the connection of C_L to ground as the other electrode. Final Office Action at 10. However, because the elements are in series, the signals are not different. Thus, *Kubota* does not teach the recited features of claim 17. Therefore, the Appellants respectfully assert that for the above reasons claim 17 is patentable over the § 102 rejection of record.

Furthermore, the rejection fails to support the allegation of inherency. In order to properly establish a rejection based on inherency, "the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flows from the teachings of the applied prior art," *Ex Parte Levy*, 17 USPQ2d 1461, 1464 (Bd. Pat. App. & Inter. 1990). The Examiner's statement that a liquid crystal layer is inherent between the two leads is a mere conclusion and does not provide any basis in fact or technical reasoning to support such an inference. *See* Final Office Action at 8. Moreover, as explained above, the Scan Signal Line Driving Circuit element (item 3, FIGURE 1) + and - leads, cited as "electrodes" by the Examiner, are connected to a power supply. Thus, it is simply without basis to allege that there is a liquid crystal layer between the leads. Thus, the Examiner has not met the burden of a rejection using inherency as a supporting rationale.

Dependent claim 19 depends from independent claim 17 and, thus, inherits all of the limitations of independent claim 17. Accordingly, *Kubota* does not teach all claim limitations of claim 19. It is respectfully submitted that dependent claim 19 is allowable at least because of its dependence from claim 17 for the reasons discussed above. Thus, Appellant respectfully asserts that for the above reasons claims 17 and-19 are patentable over the 35 U.S.C. § 102 rejection of record.

2. Claim 18

In addition to being allowable because of its dependence from claim 17, claim 18 recites features that are allowable in their own right. Claim 18 recites, in part, “the buffer circuit includes a programmable gain amplifier for each electrode, each amplifier applying the driving voltage signal to its corresponding electrode.” *Kubota* does not teach this feature. The Examiner alleges that *Kubota* teaches buffers in FIGURE 4 and that those buffers are the claimed programmable gain amplifiers. Final Office Action at 9. Appellant notes that the amplifiers in item 13b of FIGURE 4 are not taught to be programmable gain amplifiers. Identifying amplifiers, without more, is not enough to teach programmable gain amplifiers. Thus, *Kubota* does not teach the above-recited feature of claim 18. Therefore, reversal of the §102 rejection of claim 18 is respectfully requested.

D. Third Ground of Rejection

Claims 3, 5, 21, 22, and 27 are rejected under 35 U.S.C. §103(a) over *Kahn* in view of *Ferguson*. Appellant traverses the rejection.

1. Claim 3

In addition to being allowable because of its dependence from claims 1 and 2, claim 3 recites features that are allowable in their own right. Claim 3 recites, in part, “the currents passing through the first and second electrodes are constant.” Neither *Kahn* nor *Ferguson* teach or suggest this feature. The Examiner does not rely on *Ferguson* to teach or suggest the feature, nor does *Ferguson* teach or suggest the feature. See Final Office Action at 4. *Kahn* does not teach or suggest the feature for at least two reasons. First, as explained above with regard to the rejection of claim 1, *Kahn* does not teach more than one current. Second, the only current that *Kahn* does teach is a pulsed current, not a constant current. See *Kahn* at

Col. 2, lines 45-46. Accordingly, the cited combination does not teach or suggest the above-recited feature of claim 3. Therefore, reversal of the §103 rejection of claim 3 is respectfully requested.

2. Claims 5, 21, 22, and 27

Base claims 1, 20, and 24 are defined as described above. *Kahn* does not disclose each and every feature of each of these independent claims, as discussed above. *Ferguson* is not relied upon in the Office Action as disclosing these missing features. Therefore, the combination of references does not teach all elements of the claimed invention.

Claims 5, 21, 22, and 27 depend from base claims 1, 20, and 24, respectively, and thus inherit all limitations of their respective base claim. Each of claims 5, 21, 22, and 27 sets forth features and limitations not recited by the combination of *Kahn* and *Ferguson*. Thus, Appellant respectfully asserts that for the above reasons claims 5, 21, 22, and 27 are patentable over the § 103(a) rejection of record.

E. Fourth Ground of Rejection

Fourth, claim 23 is rejected under 35 U.S.C. §103(a) over *Ferguson* in view of *Kahn* in further view of *Kubota*.

As shown above, *Kahn* does not teach each and every feature of claim 20. The current rejection of claim 23 does not rely on *Ferguson* or *Kubota* to teach or suggest those missing features nor do *Ferguson* or *Kubota* to teach or suggest those missing features. Thus, the cited combination does not teach or suggest each and every feature of claim 20. Dependent claim 23 depends from independent claim 20 and, thus, inherits all of the limitations of independent claim 20. Thus, the cited combination does not teach or suggest all claim limitations of claim 23. It is respectfully submitted that dependent claim 23 is allowable at least because of its dependence from claim 20 for the reasons discussed above. Therefore, reversal of the §103 rejection of claim 23 is respectfully requested.

F. Fifth Ground of Rejection

Claims 13, 14, and 16 are rejected under 35 U.S.C. §103(a) over *Ferguson* in view of *Kahn*. Appellant traverses the rejection.

1. Claim 13

To establish a prima facie case of obviousness under 35 U.S.C. § 103(a), three basic criteria must be met. First, there must be some suggestion or motivation, either in the reference itself or in the knowledge generally available to one of ordinary skill in the art, to modify the applied reference. *See In re Vaeck* 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). Second, there must be a reasonable expectation of success. *In re Merck and Co., Inc.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). Finally, the applied reference must teach or suggest all the claim limitations. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). Without conceding the second criterion, Appellant asserts that the rejection does not satisfy the first and third criteria.

a. Lack of Motivation

The Examiner admits that *Ferguson* does not teach applying first and second voltage signals to first and second electrodes. Final Office Action at 6. The Examiner attempts to cure this deficiency by introducing *Kahn*, which the Examiner alleges to teach having such limitations. The motivation for making the combination was presented as follows:

“It would have obvious ... to provide the DC voltage source reviewed by *Kahn* for LCD device of *Ferguson*, because this would provide the voltage for the LCD device.”

It is well settled that the fact that references can be combined or modified is not sufficient to establish a prima facie case of obviousness. *See*, e.g., M.P.E.P. §2143.01. The provided motivation is improper for two reasons. First, the language of the recited motivation is circular in nature, stating that it is obvious to make the modification because it is obvious to achieve the result. Such language is merely a statement that the reference can be modified, and does not state any desirability for making the modification. Consequently, such motivational language is merely a statement that the reference can be modified, and

does not state any desirability for making the modification. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ.2d 1430 (Fed. Cir. 1990), as cited in M.P.E.P. §2143.01.

Second, *Ferguson* already has a voltage for its elements. See Figure 4, and column 4, line 64. Thus, the device of *Ferguson* would not require the teachings of *Kahn* in order to provide a voltage. Accordingly, one of skill in the art would not be motivated to look to *Kahn* to modify *Ferguson*.

In Response to Arguments, the Examiner rebuts this point by alleging that *Ferguson* and *Kahn* are analogous art, and, therefore, that motivation exists to make the combination. Final Office Action at 11-12. Whether the foregoing is true or not is irrelevant to the determination of patentability because merely alleging that the two references are analogous art is not enough to cure the fact that the stated desirability in the Final Office Action is circular. Further, such a statement does not explain why one of ordinary skill in the art would look to *Kahn* to provide a voltage when *Ferguson* already has a voltage. As explained above, no valid suggestion has been made as to why a combination of *Ferguson* and *Kahn* is desirable. Therefore, the §103 rejection of claims 13-14 and 16 should be reversed.

b. Lack of Limitations

The Office Action admits that *Ferguson* does not teach applying first and second voltage signals to first and second electrodes. The Office Action attempts to cure this deficiency by introducing *Kahn*, which the Office Action alleges to teach such limitations. However, this combination, as presented, does not teach or suggest all limitations of the claimed invention.

Claim 13 defines a method of driving a switchable polarizer in one of two modes, the switchable polarizer having first and second electrodes, wherein during a first driving mode, the electrodes heat the liquid crystal material, while during the second driving mode, the electrodes do not heat the liquid crystal material. Further, the method includes applying a first voltage signal to the first electrode and a second voltage signal to the second electrode during both the first and second driving modes. The Office Action states that the second

driving mode is taught by *Ferguson*, and is where both switches 40 and 50 are not connected to the current source 56 and the video source 58. However, this does not teach the claimed limitation where the voltage signals are applied “during both the first and second driving modes.” Thus, *Ferguson* does not teach or suggest this limitation, and the Examiner does not rely upon *Kahn* to teach or suggest this limitation. Consequently, the combination of *Ferguson* and *Kahn* does not teach or suggest all of the claimed limitations.

In Response to Arguments, the Examiner merely restates the rejection and does not add anything to show that the combination teaches the voltage signals are applied “during both the first and second driving modes.” See Final Office Action at 10-11. Therefore, Appellant respectfully asserts that for the above reasons claim 13 is patentable over the § 103(a) rejection of record.

2. Claim 14

a. Lack of Motivation to Combine

As explained above with regard to claim 13, there is a lack of motivation to combine the applied references. For the convenience of the Board, Appellant does not repeat those detailed arguments here, but asks that those arguments be considered with regard to claim 14.

b. Lack of Limitations

In addition to being allowable because of its dependence from claim 13, claim 14 recites features that are allowable in their own right. For instance, with regard to claim 14, Appellant notes that the Examiner has incorrectly used judicial precedent to show the claimed two current sources. The precedent of making separable is discussed in *In re Dulberg*, 289 F.2d 522, 523, 129 USPQ 348, 349 (CCPA 1961), as explained at M.P.E.P. § 2144.04.V.C. Such precedent may be used to separate an integral element from a device or system. However, in this case, the Examiner is using this precedent to split a single current source into two current sources. This is different from separating an integral piece from a system. *Dulberg* does not provide authority to split a single element into two. Thus, this precedent does not provide the required legal basis for this proposed modification of the references. Thus, Appellant respectfully asserts that for the above reasons claim 14 is patentable over the § 103(a) rejection of record.

3. Claim 16

a. Lack of Motivation to Combine

As explained above with regard to claim 13, there is a lack of motivation to combine the applied references. For the convenience of the Board, Appellant does not repeat those detailed arguments here, but asks that those arguments be considered with regard to claim 16.

b. Lack of Limitations

In addition to being allowable because of its dependence from claims 13 and 14, claim 16 recites features that are allowable in their own right. Claim 16 recites, in part, “applying of the voltage signals to the electrodes includes applying first and second voltage signals that are alternating signals.” The cited combination of *Ferguson* in view of *Kahn* does not teach or suggest the above-recited feature of claim 16. The Examiner does not rely on *Ferguson* to teach or suggest the feature, nor does *Ferguson* teach or suggest the feature. See Final Action at 7. *Kahn* also does not teach this feature of claim 16. The Examiner points out that *Kahn* teaches the use of AC voltages and that AC voltages are alternating. *Id.* However, *Kahn* teaches an alternating voltage source (item 22, FIGURE 1) only on one electrode (item 18, FIGURE 1). *Kahn* does not teach an alternating voltage signal on electrode 16. Accordingly, Khan does not teach or suggest the above-recited feature of claim 16. Therefore, reversal of the §103 rejection of claim 16 is respectfully requested.

G. Sixth Ground of Rejection

Claim 15 is rejected under 35 U.S.C. §103(a) over *Ferguson* in view of *Kahn* in further view of *Hong*. Appellant traverses the rejection.

1. Lack of Motivation to Combine

There is a lack of motivation to combine *Ferguson* and *Kahn*, and accordingly, there is a lack of motivation for the combination of *Ferguson* in view of *Kahn* in further view of *Hong*. The Examiner admits that *Ferguson* does not teach applying first and second voltage signals to first and second electrodes. Final Office Action at 6. The Examiner attempts to cure this deficiency by introducing *Kahn*, which the Examiner alleges to teach having such limitations. The motivation for making the combination was presented as follows:

“It would have obvious ... to provide the DC voltage source reviewed by *Kahn* for LCD device of *Ferguson*, because this would provide the voltage for the LCD device.”

It is well settled that the fact that references can be combined or modified is not sufficient to establish a prima facie case of obviousness. *See*, e.g., M.P.E.P. §2143.01. The provided motivation is improper for two reasons. First, the language of the recited motivation is circular in nature, stating that it is obvious to make the modification because it is obvious to achieve the result. Such language is merely a statement that the reference can be modified, and does not state any desirability for making the modification. Consequently, such motivational language is merely a statement that the reference can be modified, and does not state any desirability for making the modification. The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ.2d 1430 (Fed. Cir. 1990), as cited in M.P.E.P. §2143.01.

Second, *Ferguson* already has a voltage for its elements. *See* Figure 4, and column 4, line 64. Thus, the device of *Ferguson* would not require the teachings of *Kahn* in order to provide a voltage. Accordingly, one of skill in the art would not be motivated to look to *Kahn* to modify *Ferguson*.

In Response to Arguments, the Examiner rebuts this point by alleging that *Ferguson* and *Kahn* are analogous art, and, therefore, that motivation exists to make the combination. Final Office Action at 11-12. Whether the foregoing is true or not is irrelevant to the determination of patentability because merely alleging that the two references are analogous art is not enough to cure the fact that the stated desirability in the Final Office Action is circular. Further, such a statement does not explain why one of ordinary skill in the art would look to *Kahn* to provide a voltage when *Ferguson* already has a voltage. As explained above, no valid suggestion has been made as to why a combination of *Ferguson* and *Kahn* is desirable. There is nothing added to the rejection of claim 15 to cure the lack of motivation. Accordingly, there is also a lack of motivation to combine *Hong* with *Ferguson* and *Kahn*. Therefore, the §103 rejection of claim 15 should be reversed.

2. Lack of Limitations

As shown above, the combination of *Ferguson* and *Kahn* does not teach or suggest each and every feature of claims 13 and 14. Dependent claim 15 depends from claims 13 and 14 and, thus, inherits all of the limitations of those claims. Thus, *Ferguson* in view of *Kahn* does not teach each every feature of claim 15. The Final Office Action does not rely on *Hong* to teach or suggest the missing features, nor does *Hong* teach or suggest the missing features. Accordingly, the cited combination does not teach or suggest all claim limitations of claim 15. Therefore, reversal of the §103 rejection of claim 15 is respectfully requested.

VIII. CLAIMS

A copy of the claims involved in the present appeal is attached hereto as Appendix A.

IX. EVIDENCE

No evidence pursuant to §§ 1.130, 1.131, or 1.132 or entered by or relied upon by the examiner is being submitted in Appendix B.

X. RELATED PROCEEDINGS

No related proceedings are referenced in II. above, or copies of decisions in related proceedings are not provided in Appendix C.

Dated: November 11, 2005

I hereby certify that this correspondence is being deposited with the U.S. Postal Service as Express Mail, Airbill No. EV482724432US, in an envelope addressed to: MS Appeal Brief-Patents, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date shown below.

Dated: November 11, 2005

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APPENDIX A

Claims Involved in the Appeal of Application Serial No. 09/497,021

1. A switchable polarizer for optical projection displays, said comprising:
a first electrode;
a second electrode; and
a layer of liquid crystal material positioned between the first and second electrodes;
wherein the first and second electrodes conduct current to heat the polarizer.
2. The switchable polarizer of claim 1, wherein the current passing through the first electrode is equal in magnitude to the current passing through the second electrode.
3. The switchable polarizer of claim 2, wherein the currents passing through the first and second electrodes are constant.
4. The switchable polarizer of claim 2, wherein during a heating operation, the first and second electrodes apply a uniform electric field across the liquid crystal material.
5. The switchable polarizer of claim 1, wherein no current passes through the first and second electrodes when the electrodes are not heating the polarizer.
6. The switchable polarizer of claim 1, wherein during a non-heating operation of the polarizer, no current passes through either electrode, and the first electrode is at a first potential and the second electrode is at a second potential different from the first potential.
7. The switchable polarizer of claim 1, wherein the first and second electrodes are transparent electrodes.
8. The switchable polarizer of claim 1, wherein the first electrode receives a first voltage signal and the second electrode receives a second voltage signal.
9. The switchable polarizer of claim 8, wherein the first and second voltage signals are alternating signals.

10. The switchable polarizer of claim 9, wherein the first and second voltage signals are symmetrically opposite bipolar signals.

11. The switchable polarizer of claim 1, wherein the polarizer serves as a polarization compensator in an optical projection display.

12. The switchable polarizer of claim 1, wherein the polarizer is a polarizing switch of an electronic color switch.

13. A method of driving a switchable polarizer in one of two modes, the switchable polarizer having first and second electrodes and a liquid crystal material between the electrodes, wherein during a first driving mode, the electrodes heat the liquid crystal material, while during the second driving mode, the electrodes do not heat the liquid crystal material, said method comprising:

drawing equal currents through the first and second electrodes during the first driving mode; and

applying a first voltage signal to the first electrode and a second voltage signal to the second electrode during both the first and second driving modes, the first and second voltage signals sustaining the currents drawn through the first and second electrodes during the first driving mode.

14. The method of claim 13, wherein the drawing of currents through the electrodes includes coupling the electrodes to two current sources.

15. The method of claim 14, wherein the applying of the voltage signals to the electrodes includes coupling each electrode to an output of an amplifier.

16. The method of claim 14, wherein the applying of the voltage signals to the electrodes includes applying first and second voltage signals that are alternating signals.

17. A switchable polarizing apparatus for optical projection displays, said apparatus comprising:

a first electrode for receiving a first driving signal, and a second electrode for receiving a second driving signal, wherein the first and second driving signals are different;

a layer of liquid crystal material positioned between the first and second electrodes;

a first current source switchably coupled to the first electrode, said first current source for drawing a first current through the first electrode;

a second current source switchably coupled to the second electrode, said second current source for drawing a second current through the second electrode, said second current being equal in magnitude to the first current; and

a buffer circuit coupled to the first and second electrodes, said buffer circuit applying the driving voltage signals to the first and second electrodes, said driving signals sustaining the first and second currents through the electrodes.

18. The apparatus of claim 17, wherein the buffer circuit includes a programmable gain amplifier for each electrode, each amplifier applying the driving voltage signal to its corresponding electrode.

19. The apparatus of claim 17, wherein each programmable gain amplifier receives a polarization drive signal and a reference voltage signal, the reference voltage signal determining the magnitude of the driving voltage signal applied by the amplifier, and the polarization drive signal determining the polarity of the driving voltage signal applied by the amplifier.

20. A switchable polarizer for optical projection displays, comprising:
a set of electrodes arranged in two layers; and
a layer of liquid crystal material positioned between the two layers of the set of electrodes;

wherein said set of electrodes are operable to control polarization states of said layer of liquid crystal and are operable to conduct sufficient current to control a temperature of said layer of liquid crystal.

21. The switchable polarizer of claim 20 wherein each of said set of electrodes includes a respective first contact and a respective second contact.

22. The switchable polarizer of claim 20 further comprising:
a set of switches that selectively enable current to flow through said set of electrodes.

23. The switchable polarizer of claim 20 further comprising:
a set of amplifiers that supply current to said set of electrodes.

24. A method of operating a liquid crystal polarizer, comprising:
driving a set of electrodes to cause current to flow through said set of electrodes to sufficiently heat a liquid crystal layer of said liquid crystal polarizer to control a temperature of said liquid crystal layer, wherein said set of electrodes is arranged in two layers surrounding said liquid crystal layer; and

driving said set of electrodes to establish an electric field across said layer of liquid crystal to control polarization states of said liquid crystal.

25. The method of claim 24 wherein said driving said set of electrodes to cause current to flow and said driving said set of electrodes to establish an electric field occur simultaneously.

26. The method of claim 24 wherein said driving said set of electrodes to cause current to flow and said driving said set of electrodes to establish an electric field occur in different operational modes.

27. The method of claim 24 wherein said driving said set of electrodes to cause current to flow includes:

engaging a plurality of switches coupled to said set of electrodes.

28. The method of claim 24 wherein said driving said set of electrodes to cause current to flow applies symmetric bipolar signals to drive said first set of electrodes to a positive potential and to drive said second set of electrodes to a negative potential.

APPENDIX B

None.

APPENDIX C

None.